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The Negation Bias:
When Negations Signal Stereotypic Expectancies

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Abstract

Research on linguistic biases shows that stereotypic expectancies are implicitly reflected in language and thereby subtly communicated to message recipients. We examined whether these findings extend to the use of negations (e.g., *not smart* instead of *stupid*). We hypothesized that people use more negations in descriptions of stereotype inconsistent behavior than in descriptions of stereotype consistent behavior. In three studies, participants either judged the applicability of experimentally controlled person descriptions, or spontaneously produced person descriptions themselves. Results provided support for this hypothesis. Moreover, a fourth study demonstrated that negations have communicative consequences. When a target person's behavior was described with negations, message recipients inferred that this behavior was an exception to the rule, and that it was more likely caused by situational circumstances than by dispositional factors. These findings indicate that by using negations people implicitly communicate stereotypic expectancies, and that negations play a subtle but powerful role in stereotype maintenance.

The Negation Bias:

When Negations Signal Stereotypic Expectancies

When people describe others' behaviors they can choose different words and formulations. For example, people can describe a person's dim comment as *Harry was stupid* or *Harry was not smart*. Which description they choose seems arbitrary at first sight. Both sentences adequately describe the event and people do not seem to give their choice of words much thought. Yet, research shows that rather than being arbitrary, people's choice of words and language use is driven by systematic and implicit social cognitive processes. For instance, research on linguistic biases shows that people's prior expectancies and stereotypes influence their choice of words in describing others. That is, people use more abstract predicates to describe stereotype consistent behaviors than stereotype inconsistent behaviors. This biased language use not only reflects a speaker's stereotypic expectancies about a person, but, importantly, also transmits these expectancies to recipients. In this way, biased language use is one of the predominant means of stereotype maintenance at an interpersonal level (Maass, 1999; Maass, Salvi, Arcuri & Semin, 1989; Sekaquaptewa et al., 2003; Wigboldus, Semin & Spears, 2000).

To extend our knowledge on linguistic biases, the present paper introduces the negation bias. Negation descriptions contain a negation marker such as *not* or *no* to deny the truth value of a particular proposition (e.g., Harry was not smart). We will refer to descriptions of others' behavior that include such negation markers as *negations*. Conversely, affirmation descriptions assert the truth value of a particular proposition and may be used to describe the same behavioral event (e.g., Harry was stupid). In the present research, we investigate whether the use of negations is influenced by people's stereotypic expectancies and whether negations are thereby able to transmit stereotypes between people. We suggest that people tend to use more negations when they describe stereotype inconsistent information

than when they describe stereotype consistent information. For example, people may be inclined to say *Harry was not smart*, when Harry's dim comment is stereotype inconsistent with the social category to which Harry belongs (e.g., Harry is a professor). Conversely, they may be more inclined to say *Harry was stupid* when the behavior is stereotype consistent with the social category (e.g., Harry is a soccer hooligan). Moreover, we expected that this biased use of negations and affirmations results in stereotype confirming inferences among recipients of these communications, thereby contributing to stereotype maintenance at the interpersonal level.

In the following, we first review prior research on linguistic biases. Next, we examine existing knowledge about negations from pragmatics and psycholinguistics. Subsequently, we unfold further our argument about the occurrence and consequences of a negation bias.

Linguistic Biases

Research on linguistic biases shows that the words used to describe others' behaviors subtly reflect people's stereotypic expectancies about others. People systematically vary their language use in communications about stereotype inconsistent and stereotype consistent information. The linguistic intergroup and expectancy bias, for example, shows that people tend to use more concrete, descriptive language when describing behavior that violates stereotypic expectancies, whereas they use more abstract language when the same behavior is consistent with stereotypic expectancies (i.e., Maass et al., 1989; Wigboldus et al., 2000). Thus, when describing a man demonstrating behavior which is inconsistent with the male stereotype (e.g., crying), people use relatively concrete language (e.g., he has tears in his eyes). In contrast, when describing a woman demonstrating the same behavior, people tend to use more abstract language to describe this stereotype consistent event (e.g., she is emotional; Wigboldus et al., 2000). Similarly, the stereotypic explanatory bias shows that descriptions of stereotype inconsistent behavior tend to contain more explanations aimed at clarifying the

apparent inconsistency than descriptions of stereotype consistent behavior (Sekaquaptewa et al., 2003). Underlining the powerful role these linguistic biases play in stereotype maintenance, research shows that they operate outside of people's awareness and are related to implicit measures of prejudice (e.g., von Hippel, Sekaquaptewa, & Vargas, 1997).

The significance of these linguistic biases in descriptions of others lies in the fact that they implicitly communicate stereotypes to message recipients. The linguistic intergroup and expectancy bias, for example, causes recipients to draw inferences from descriptions that are consistent with the stereotypic expectancies of the communicator (Maass et al., 1989; Wigboldus et al., 2000). The relatively concrete language use in stereotype inconsistent messages causes recipients to infer that the behavior is unexpected, is an exception to the rule, and that it is more likely caused by situational circumstances than by dispositional factors. In contrast, the more abstract language use in stereotype consistent messages implies that the behavior is expected and that it is more likely caused by the actor's dispositional characteristics than by situational circumstances. Thus, by means of subtle variations in language abstraction use, people implicitly transmit their stereotypic expectancies to recipients, with the effect that the stereotype is shared and maintained interpersonally (Franco & Maass, 1996; Wigboldus et al. 2000).

Existing research on linguistic biases reflecting stereotypic expectancies has not addressed the role of negations. In the current paper we aim to fill this gap and introduce the *negation bias*. The negation bias is conceptualized as people's tendency to use negations when communicating stereotype inconsistent information about others. Specifically, we expect that people use more negations when they communicate stereotype inconsistent information than when they communicate stereotype consistent information. Moreover, we hypothesize that recipients are sensitive to this biased use of negations by communicators, in that they will make biased attributions based on this information. In this way, the negation

bias may contribute to the interpersonal maintenance and transmission of stereotypes. Our expectations are fueled by earlier work on negations that is described in following.

Negations

Philosophers, logicians, psychologists, and linguists have studied negations in language use extensively (for an overview see Horn, 1989). A central issue they aimed to explain is when and why people use a negation rather than an affirmation to communicate information. According to Jordan (1998) the commonly held view is that negations (e.g., not drunk) are equivalent in meaning to their semantic opposites (e.g., sober). Jordan, in contrast, argued that negations are different, in that negations are more likely to be used in denying something previously stated or implying the contrary. In a pragmatics study he provided illustrations from natural written and spoken language to back up this claim. For example, signs in public areas typically use negations to signal exceptions. To illustrate, a no-exit sign on a door acknowledges that people expect to be able to leave an area via any door. Similarly, a no-smoking sign is used when the expected norm is that smoking is generally allowed. This suggests that negations are meaningful in that they deny what people expect to be the general rule.

The relation between expectations and negation use also follows from the use of expressions in communicating quantities (Moxey & Sanford, 2000). A statement like *not many people go to the cinema* implies that someone might have expected that many people would go to the cinema, and subsequently denies that this was the case. The negation *not many* suggests either that the speaker expected that many people would go, or that the speaker believed the listener expected that many people would go. Thus, one function of negations seems to be that they indicate something that is different, unusual, or contrary to an existing expectancy (Jordan, 1998).

Experimental studies into negations have focused mainly on *how* negated concepts are processed and comprehended rather than on *when* they are used. Importantly, also these studies suggest that negations are relatively more appropriate in communications about expectancy inconsistent information than expectancy consistent information. That is, sentences containing a negation typically take more time to process and comprehend than affirming sentences (Carpenter & Just, 1975; Clark & Chase, 1972; Gough, 1965; Deutsch, Gawronski, Strack, 2006). Interestingly, however, this difference in processing time seems to disappear when negations are used in an appropriate context (Glenberg, Robertson, Jansen & Johnson-Glenberg, 1999; Wason, 1965). One appropriate context (a so called *context of plausible denial*; Wason, 1965) is one in which an expectation needs to be denied or to be noted. For example, the negation *the train was not late this morning* is more plausible when the train is normally late than when it is normally punctual. Thus, negations seem to be more plausible, and thereby more easy to process and comprehend, in contexts in which they denote information that is inconsistent with people's expectations.

Further support for this assumption is provided by a developmental study (De Villiers & Flusberg, 1975). In this study, children of age 2 to 4 watched displays of seven similar objects (e.g., toy cars) and one dissimilar object (e.g., a baby bottle). The experimenter pointed to an object and prompted children with affirmations (i.e., This is a...) and negations (i.e., This is not a...). The children's task was to respond with the name of the object. The dependent variables consisted of the time taken to name the object and the error rate. Results showed that when the experimenter pointed to one of the seven similar objects, the children responded faster to the affirmation prompt than to the negation prompt. However, when the experimenter pointed to the dissimilar object, the children responded equally fast to the affirmation and negation prompts. Apparently, the processing of negations is facilitated when they are used to communicate unexpected or unusual information.

Taken together, research on negations suggests that they are more appropriate and easier to comprehend in communications about expectancy inconsistent information.

Extending these findings to the communication of stereotypes, we propose that the use of negations in describing other people is driven by existing stereotypic expectancies, resulting in the negation bias.

The Negation Bias

Why should the use of negations change as a function of stereotypic expectancies? We know from the stereotype literature that, upon perceiving (or reading about) the behavior of an actor, people automatically activate the mental representations associated with the person or the social category to which the person belongs (Devine, 1989; Fiske, 1998; Gilbert & Hixon, 1991; Lepore & Brown, 1997; Wigboldus, Dijksterhuis & Van Knippenberg, 2003). For example, the category label professor activates stereotype consistent trait terms such as *smart* and inhibits stereotype inconsistent trait terms such as *stupid* (Dijksterhuis & Van Knippenberg, 1996). One result of this is that the activation of a social category should make the use of terms that are stereotype consistent with this category more probable in descriptions of category members. In a similar vein, because of the decreased accessibility of stereotype inconsistent terms, their use will be less likely in these descriptions.

Taken together, this should result in an increased likelihood of negation use when the person's behavior is stereotype inconsistent. To get back to our previous example, when describing a person who made an awkwardly dim comment, one might be inclined to use the term *stupid*. However, the prior knowledge that this person is a professor will make stereotype consistent terms, such as *smart*, temporarily more accessible, and stereotype inconsistent terms, such as *stupid*, temporarily less accessible. Due to these differences in accessibility, the description of the dim behavior of a professor is relatively likely to contain a negation (i.e., *She is not smart*). Conversely, when describing a person who made a very clever comment,

one might be inclined to use the term *smart*. Yet, the prior knowledge that this person is a soccer hooligan will render the concept *stupid* more accessible (and the term *smart* less accessible) and as a result lead to a description containing a negation (i.e., *not stupid* rather than *smart*).

Importantly, the stereotypically biased use of negations may be an important source of bias by which people subtly reveal and communicate their stereotypic expectancies. By choosing a negation instead of an affirmative antonym, people introduce stereotype consistent information to the discourse. To illustrate, when stating that Harry's dim comment was not smart, one introduces the meaning of the negated item (i.e., smart) and the presupposition that Harry was expected to be smart, which is denied. Moreover, by introducing information via a negation, people convey a mitigated, more neutral version of the described event (see Giora, Fein et al., 2005). To illustrate, *not smart* introduces a positive concept to describe Harry's dim comment, and consequently conveys a less negative impression of Harry's behavior than stating that Harry's comment was *stupid*. Likewise, *not stupid* conveys a less positive impression than *smart*, because it introduces a negative concept. Thus, when negations are used, a less extreme, more neutral meaning is conveyed.

With respect to the communicative consequences, we expect the proposed biased use of negations (e.g., to describe negative behavior of a professor as 'not smart' rather than 'stupid') to go together with a stereotype confirming pattern of inferences in recipients. First, when negations rather than affirmations are used, we expect message recipients to develop a less extreme impression of the actor's behavior (i.e., less negative in the case of 'not smart'). Second, we expect recipients to infer that the communicators' prior expectancy is opposite to the described behavior (i.e., he/she expected 'smart' behavior). Moreover, we expect recipients to attribute the information in messages containing a negation relatively less to stable dispositional factors of the actor and more to situational factors. This pattern of

inferences is stereotype confirming, because it maintains the stereotypic view about the described actor (i.e., professors are smart).

In summary, in the present work we aim to apply what pragmatics and linguistics teach us about negations to linguistic biases and stereotype maintenance. We investigated whether the use of negations is driven by stereotypic expectancies and whether the use of negations results in a stereotype confirming pattern of inferences in message recipients. We hypothesize that when people describe stereotype inconsistent behavior of an actor, they will be more likely to use negations than when they describe stereotype consistent behavior. The first three experiments aimed to test this hypothesis, using different methods and experimental designs. The fourth experiment examined the communicative consequences of the use of negations among recipients. We will further underpin our hypotheses regarding these communicative consequences in the introduction of Study 4.

Study 1

Study 1 was designed as an initial test of our hypothesis that the use of negations in describing an actor's behavior increases when the behavior is stereotype inconsistent. Participants were presented a series of sentence pairs describing an actor's behavior. Each sentence in a pair described the same actor and behavior and had the same structure, except that one sentence contained a negated adjective (e.g., not neat) and the other an affirmative antonym (e.g., messy). Participants indicated which sentence in each pair gave a more common description in their language (see also Giora, Balaban, Fein & Alkabets, 2005, Exp. 2). In half of the sentence pairs the behavior of the actor was stereotype inconsistent; in the other half it was stereotype consistent. In addition, even though our hypotheses are independent of valence, in our design we controlled for the factor valence of the actor's behavior. We predicted that participants would show a relatively greater preference for the sentences containing a

negation when the behavior was stereotype inconsistent than when it was consistent, and that this effect would be independent of valence of the behavior.

Method

Participants and design

Thirty-one Dutch undergraduates at the VU University Amsterdam (15 women, 16 men, mean age 19 years) participated in this, and an unrelated study, and received € 3.50 for their participation of about 25 minutes. Participants were presented with sentence pairs describing an actor's behavior. The two sentences of each pair described the same actor and the same behavioral event, but one of them contained a negation and the other an affirmative antonym. For each pair, participants chose the sentence that felt most natural in the Dutch language. The sentence pairs varied in stereotype consistency and valence of the actor's behavior, and we counterbalanced the position of the negation and affirmation in a pair. The study thus consisted of a 2 (position: negation first vs. negation second) X 2 (stereotype consistency: consistent vs. inconsistent) X 2 (valence: positive vs. negative) design with repeated measures on the last two factors. The dependent variable consisted of the number of times participants chose the negation alternative in the different sentence pairs.

Procedure

Upon arrival to the lab participants were seated in individual cubicles behind a computer and told that all instructions would be presented on the computer screen. They read that this was a study on choice of words, and that they would be presented with sentence pairs of two sentences describing the same situation. We explained that the sentences were not meant to be ironic or funny but would simply describe people and their behavior. The words in the two sentences would have more or less the same meaning, and would be correct descriptions of the same situation, but the choice of words would be different. It was their task to indicate which of two sentences presented in a pair felt most natural to them. They were

told not to think too long about their answer and to answer spontaneously. Next, the sentence pairs were presented. Depending on the position condition, for half of the participants the negation was presented in the top box on screen and the affirmation description in the box below, for the other half of participants this presentation was reversed. Participants could indicate their answer by clicking on the box showing the sentence they preferred. After finishing the task, participants were debriefed, thanked, and paid.

Sentence stimuli

To manipulate stereotype consistency of the actor's behavior we developed five sets of stimuli that were used to create the sentences. Each set consisted of two actors and two adjectives that were antonyms. One of the adjectives in each set was stereotype consistent with actor one, but stereotype inconsistent with actor two, while the second adjective was stereotype inconsistent with actor one, but consistent with actor two. For example, one set consisted of the two actors *rock musician* and *cleaner* and the two adjectives *messy* and *neat*. *Messy* was considered to be stereotype consistent with *rock musician*, but inconsistent with *cleaner*, whereas *neat* was stereotype consistent with *cleaner*, but inconsistent with *rock musician*. Each set allowed us to create four pairs of sentences in which one sentence contained a negation and the other one an affirmation, while keeping the structure and content constant across conditions. In each set, two sentence pairs described positive behavior and two negative behavior and two were stereotype inconsistent and two stereotype consistent. To illustrate, based on the set *cleaner* and *rock musician* and *neat* and *messy*, we created one sentence pair describing positive, stereotype consistent behavior: *The cleaner did leave a neat hotel room* (affirmation) / *The cleaner did not leave a messy hotel room* (negation); one sentence pair describing positive, stereotype inconsistent behavior: *The rock musician did leave a neat hotel room* (affirmation) / *The rock musician did not leave a messy hotel room* (negation); one sentence pair describing negative, stereotype consistent behavior: *The rock*

musician did leave a messy hotel room (affirmation) / *The rock musician did not leave a neat hotel room* (negation); and one sentence pair describing negative, stereotype inconsistent behavior: *The cleaner did leave a messy hotel room* (affirmation) / *The cleaner did not leave a neat hotel room* (negation).

The other sentence sets that were used to manipulate stereotype consistency and valence were: The journalist did (not) describe Hitler (Ghandi) as a warlike (peaceful) leader; That brilliant (dull) student did (not) write a good (bad) thesis; My grandpa (little sister) thought he /she was (not) old (young); The woman at the funeral (wedding party) looked (did not look) happy (sad).¹ The presentation order was such that a sentence pair from Set 1 was followed by a sentence pair from Set 2 until Set 5, and then starting again with a sentence pair from Set 1, Set 2 and so forth until all 20 sentence pairs had been presented.

Results

Of the 20 sentence pairs, participants were generally more likely to choose the affirmation alternative than the negation alternative. On average, participants chose the negation alternative in 26.6% of the sentence pairs (mean number of negations chosen $M = 5.32$, $SD = 2.21$, minimum 0, maximum 9). The mean number of negations chosen in the different sentence pairs was submitted to a 2 (stereotype consistency: consistent vs. inconsistent) X 2 (valence: positive vs. negative) repeated measures analysis of variance (ANOVA). Preliminary analyses indicated that position did not result in any effects and therefore is not reported here. The analysis revealed the predicted main effect of stereotype consistency, $F(1, 30) = 48.36$, $p < .01$, $\eta_p^2 = .62$. Participants were significantly more likely to choose the negation alternative in sentence pairs in which the actor's behavior was stereotype inconsistent ($M = 4.42$ out of 10 sentence pairs, $SD = 2.20$) compared to sentence pairs in which the actor's behavior was stereotype consistent ($M = 0.90$ out of 10 sentence pairs, $SD =$

1.25). We observed no main effect for valence ($F < 1$), nor an interaction effect ($F(1, 30) = 2.60, p = .12, \eta_p^2 = .08$).

Discussion

The results of Study 1 support the hypothesis that people's preference for negations over affirmations increases when stereotype inconsistent behavior is communicated.

Participants were significantly more likely to opt for a sentence formulation containing a negation when the behavior of the actor was stereotype inconsistent than when it was stereotype consistent. Thus, although people generally prefer affirmation formulations over negations (Carpenter & Just, 1975; Gough, 1965), in the case of descriptions of stereotype inconsistent behavior, participants indicated a relative preference for negations.

The forced choice method used in Study 1 allowed us to compare preferences for two distinct sentence formulations (affirmation vs. negation) of otherwise identical sentences. At the same time, it prevented us from obtaining information about the *extent* to which people prefer negations and affirmations to describe stereotype inconsistent and consistent behavior. Moreover, it did not allow us to test our prediction that perceived stereotype inconsistency causes the relative increase in preferences for negations. We conducted Study 2 to address these questions.

Study 2

Study 2 aimed to replicate Study 1 using a different method and stimulus material and to circumvent the shortcomings of the forced choice task. To this end, participants read sentences describing an actor's stereotype consistent and inconsistent behavior (e.g., The nurse shouts at the waiter). Each sentence was succeeded by two different descriptions of the behavior, one including a negation (e.g., She is not nice) and one containing the affirmative antonym (e.g., She is rude). Participants judged the applicability of each of these descriptions. To manipulate stereotype consistency, we varied the social category to which the actor

belonged (e.g., nurse, soccer hooligan). The behavior in the descriptions was either stereotype consistent or stereotype inconsistent with these categories.

This method allowed us to test whether participants judge negation descriptions as more applicable when the behavior is stereotype inconsistent than when the behavior is stereotype consistent. In addition, we measured the extent to which participants perceived the behaviors as stereotype inconsistent, which allowed us to test whether stereotype consistency is predictive of the judged applicability of negation descriptions.

Method

Participants and design

Thirty-six Dutch undergraduates at the VU University Amsterdam (22 women, 14 men, mean age 21.3 years) participated in this, and an unrelated study, and received € 2.50 for their participation of about 20 minutes. Participants read 24 sentences, half of which described an actor performing stereotype consistent behavior and half described an actor performing stereotype inconsistent behavior. Each sentence was followed by two descriptions: one negation and one affirmation. Participants judged the applicability of each description in describing the behavior in the sentence. The study consisted of a 2 (stereotype consistency of behavior: consistent vs. inconsistent) x 2 (description type: negation vs. affirmation) within participants design.

Procedure

Participants were seated in individual cubicles behind a computer and were told that all instructions would be presented on the computer screen. They read that this was a study on behavior descriptions, and that they would be presented with sentences describing a person's behavior followed by two possible descriptions describing the behavior in the sentence. They were asked to indicate how applicable they found each description for the behavior in the sentence. Subsequently, the sentences were presented (e.g., The professor scored high on an

IQ test), followed by two possible descriptions in succession: a negation description (e.g., He is not stupid) and an affirmation description (e.g., He is smart). For each description participants indicated how applicable they found the description, by clicking a box on a 7-point scale ranging from 1 = *not at all applicable*, to 7 = *very applicable*. The behavior in the sentences (e.g., scored high / low on an IQ test) was either stereotype consistent or inconsistent for the actor (e.g., professor vs. garbage man). See below and Appendix A for all stimuli and presentation order. After judging the descriptions, the sentences were presented once more and participants indicated how unexpected they found the behavior in each sentence on 7-point scales ranging from 1 = *not at all unexpected*, to 7 = *very unexpected*. Finally, participants were debriefed, thanked, and paid.

Stimuli

For this study, we developed six new sets of actors and behaviors that allowed us to create stereotype consistent and inconsistent sentences, while keeping the content constant across the different conditions (a - f, see Appendix A). Similar to Study 1, each set consisted of two actors (e.g., professor / garbage man) and two behaviors (e.g., scored high / low on the IQ test: partly based on Wigboldus, et al., 2003). One behavior was stereotype consistent for actor one, but stereotype inconsistent for actor two, while the second behavior was stereotype inconsistent for actor one, but consistent for actor two. For example, ... *scored high on the IQ test* is stereotype consistent for a professor, but inconsistent for a garbage man, whereas ... *scored low on an IQ test* is stereotype consistent for a garbage man, but inconsistent for a professor. Each of the six sets was associated with two relevant behavior descriptions; one negation and one affirmation. The traits used in the negation and affirmation descriptions were antonyms so that both descriptions provided semantically adequate descriptions of the behavior. For example, for the behavior *scored high on the IQ test* the associated descriptions were *He is smart* and *He is not stupid*; for the behavior *scored low on the IQ test* these were

He is stupid and *He is not smart*. The six sets of actors and behaviors, allowed us to create 24 sentences, half of which were stereotype consistent and half were stereotype inconsistent. Each sentence was associated with two descriptions (one negation, one affirmation). Note that in this design, actors, behaviors, and the judged descriptions were exactly the same across the stereotype consistent and inconsistent conditions.

As can be seen in Appendix A, the order of the sentences was such that a random sentence from set (a) was followed by a random sentence from set (b), and so forth till set (f), and again starting with a remaining sentence from set (a). In this way the different actor and behavior combinations from the different sets were presented in a mixed random order.

Results

Applicability of behavior descriptions

To test our hypothesis that negation descriptions were perceived as relatively more applicable in descriptions of stereotype inconsistent behavior compared to stereotype consistent behaviors, we computed the mean rated applicability for the affirmation and negation descriptions for both the stereotype inconsistent and consistent behaviors (Cronbach α 's ranged from .75 to .82). This resulted in four scores that were entered in a 2 (stereotype consistency of behavior: inconsistent vs. consistent) X 2 (description type: affirmation vs. negation) analysis of variance (ANOVA) with repeated measures on both factors. Similar to Study 1, we found a significant main effect of description type, $F(1, 35) = 25.17, p < .01, \eta_p^2 = .42$, indicating that affirmation descriptions ($M = 5.48, SE = 0.11$) were rated as more applicable than negation descriptions ($M = 4.74, SE = 0.16$). Furthermore, we observed a marginally significant main effect of stereotype consistency of behavior, $F(1, 35) = 3.91, p < .056, \eta_p^2 = .10$, indicating that descriptions for stereotype consistent behaviors ($M = 5.17, SE = 0.12$) tended to be rated as somewhat more applicable than descriptions for stereotype inconsistent behaviors ($M = 5.06, SE = 0.12$).

More interesting, however, is the expected significant interaction between stereotype consistency and description type, $F(1, 35) = 29.80, p < .01, \eta_p^2 = .46$. Participants rated the affirmation descriptions as more applicable for stereotype consistent behaviors ($M = 5.70, SD = 0.65$; e.g., the professor is smart) than for stereotype inconsistent behaviors ($M = 5.27, SD = 0.73$; e.g., the professor is stupid), $t(35) = 5.12, p < .01, r = .30$. Consistent with our predictions, for negation descriptions, we found the opposite pattern; participants rated negation descriptions as more applicable for stereotype inconsistent behaviors ($M = 4.85, SD = 0.89$; e.g., the professor is not smart) than for stereotype consistent behaviors ($M = 4.64, SD = 1.06$; e.g., the professor is not stupid), $t(35) = 2.72, p < .02, r = .11$.

Unexpectedness of behavior in sentence

We conducted a paired t -test on the mean ratings of how unexpected the stereotype consistent and inconsistent sentences were. The test confirmed that participants rated stereotype inconsistent sentences as significantly more unexpected ($M = 5.23, SD = 0.63$) than stereotype consistent sentences ($M = 2.67, SD = 0.87$), $t(35) = 12.29, p < .01, r = .86$, confirming that our manipulation was successful.

Our hypothesis stated that the more unexpected a behavior is, the more likely it will be described using a negation (e.g., not stupid) than an affirmative antonym (e.g., smart). To analyze whether this was the case, we used a method developed to estimate mediation and moderation effects in within-participant designs (Judd, Kenny, & McClelland, 2001). First, to obtain a single dependent measure, we computed a new variable indicating the relative applicability of negations vs. affirmations, by subtracting the affirmation applicability from the negation applicability. A higher score on this variable thus indicated greater applicability of the negation description relative to the affirmation description. We calculated this score separately for the stereotype inconsistent and consistent behaviors. Next, the difference in the relative applicability scores between conditions (relative applicability for stereotype

inconsistent descriptions – relative applicability for stereotype consistent descriptions) for each participant was regressed on two predictors: the sum of each participant's unexpectedness ratings of stereotype inconsistent and consistent behaviors (unexpectedness of inconsistent behaviors + unexpectedness of consistent behaviors) and the difference in each participant's unexpectedness ratings of inconsistent and consistent behaviors (unexpectedness of inconsistent behaviors – unexpectedness of consistent behaviors; see Judd et al., 2001).

Judd et al. (2001) argued that to show that unexpectedness mediates the effect of stereotype consistency on the relative applicability of descriptions, two conditions must be met. First, there must be a significant difference between stereotype consistency conditions in the potential mediator, in our case unexpectedness. As reported above, this was the case. Second, the unexpectedness difference must predict the difference in relative applicability score. This was the case, $\beta = .37$, $t(33) = 2.18$, $p = .04$. According to Judd et al. (2001), if the sum score of unexpectedness had predicted the difference score on relative applicability of descriptions, this would reflect a moderation model. This was not the case, $\beta = -.07$, $t < 1$, $p = .66$. Furthermore, after centering the sum score of unexpectedness (by subtracting the mean) the same model was estimated again. The intercept in this model was not found to differ significantly from zero, $t < 1$, $p = .69$, which indicates that there is no residual effect of stereotype consistency condition over and above the mediated effect (Judd et al., 2001).

Taken together, these analyses provide evidence for full mediation of the effect of stereotype consistency on the relative applicability of negation vs. affirmation descriptions by perceived unexpectedness (Judd et al., 2001).

Discussion

The findings of Study 2 again corroborate the existence of a negation bias. In line with the results of Study 1, negation descriptions were rated as more applicable when they described stereotype inconsistent behavior than when they described stereotype consistent

behavior. Specifically, the same behavior (e.g., shouting at the waiter) was more likely described with a negation (e.g., not nice) when the actor was not expected to show this behavior (e.g., a nurse) than when the actor was expected to show this behavior (e.g., a soccer hooligan).

Moreover, mediation analysis demonstrated that it was the perceived unexpectedness of the behavior in a sentence that mediated the rated applicability of negation (vs. affirmation) descriptions. These results provide clear evidence for our notion that when stereotypic expectancies are violated, the use of negations in person descriptions becomes more likely.

Nonetheless, given that the methods of Study 1 and 2 relied on sentence stimuli created by us, an important question that remains unanswered is whether people spontaneously produce the negation bias when they are free to formulate their own person descriptions. Study 3 aimed to increase the external validity of the findings of the first two studies by using spontaneous person descriptions. We expected participants to spontaneously use more negations in free descriptions of people showing stereotype inconsistent behavior than in descriptions of people showing stereotype consistent behavior.

Study 3

Study 3 used gender stereotypes to examine the effect of stereotypic expectations on the use of negations. It was tested whether people spontaneously use more negations when describing gender stereotype inconsistent behavior than gender stereotype consistent behavior. To prevent the confounding influence of semantic priming effects, we manipulated stereotype consistency in a non-semantic way. We combined photos of two persons (one male and one female) and two sports (one stereotypically male, one stereotypically female). Participants freely described their impression of the person who ostensibly engaged in one of the sports.

Method

Participants and design

Sixty-five Dutch undergraduates at the VU University Amsterdam (42 women, 23 men, M age = 21 years) participated in this, and other unrelated studies, and received € 5,- for their participation of about 40 minutes. They were randomly assigned to one of the conditions of a 2 (gender stereotype consistency: consistent vs. inconsistent) X 2 (described person: woman vs. man) between participants design.

Procedure

Participants were seated in individual cubicles and were told that all instructions would be presented on the computer screen. They read that in this study we were gathering descriptions of different sports and the people who practice them, and that they would be shown a photo of a specific sport and of a person who practices this sport. They were asked to take their time to describe their impression of the sport and the person. Depending on condition, the next screen showed on the left an action photo of people performing either the stereotypically female sport of jazz ballet or the stereotypically male sport of rugby. On the right, a photo of either a woman or a man was shown, who we said was someone who practiced this sport. In the stereotype consistent conditions the jazz ballet photo was combined with the photo of the woman and the rugby photo with the photo of the man. The converse was true for the stereotype inconsistent conditions.

Below the pictures was a box in which participants could type their descriptions. To activate the stereotype, we first asked participants to describe what they found typical of the sport and the people who practice it. In the same box, participants subsequently were asked to describe their impression of the man or the woman in the photo and how they expected him/her to behave when practicing the sport. The dependent variable consisted of the number of negations used in the descriptions of the person, which was obtained by counting occurrences of *not* or *no* (Dutch: *niet*, *geen*) in the text describing the person. We also registered the time and the number of words participants used for their description.

After providing their description, participants answered the following questions on 7-point scales ranging from 1 = *not at all* to 7 = *very much*. First, we asked *How unexpected is it that this person practices this sport?*, and *To what extent is this person someone who typically practices this sport?*. After reverse coding the second item, these items formed a reliable scale measuring *unexpectedness* (Cronbach's $\alpha = .83$). To check whether rugby was indeed viewed as a stereotypically male sport and jazz ballet as a stereotypically female sport we asked participants in all conditions two questions: *To what extent is rugby a sport typical for men?*, and *To what extent is jazz ballet a sport typical for women?*

Results

We conducted 2 (gender stereotype consistency: consistent, inconsistent) X 2 (described person: woman, man) univariate analyses of variance (ANOVAs) on all dependent variables.

Manipulation check

Participants agreed with the notion that rugby is a stereotypically male sport ($M = 6.32$, $SD = 0.92$) and jazz ballet a stereotypically female sport ($M = 5.15$, $SD = 1.86$). Both the mean rating for rugby and jazz ballet were significantly higher than the scale midpoint of 3.5, $t(64) = 24.73$, $p < .01$, $r = .95$, for rugby; $t(64) = 7.18$, $p < .01$, $r = .67$, for jazz ballet, respectively.

Use of negations

Before analyzing our main hypothesis regarding the number of negations used, we checked whether there were any systematic differences in writing time or length of descriptions between conditions. The analyses of variance did not yield effects for writing time (all F s < 1.1 ; overall $M = 5.44$ minutes, $SD = 2.92$) or the number of words used to describe the person (all F 's < 1 ; overall $M = 69$ words, $SD = 38$).

We hypothesized that participants would use more negations when describing a person in a stereotype inconsistent situation than when describing the same person in a stereotype consistent situation. To test this hypothesis, we conducted an analysis of variance on the number of negations that were used in descriptions of the person. Consistent with our prediction the analysis yielded a significant main effect of stereotype consistency, $F(1, 61) = 10.77, p < .01, \eta_p^2 = .15$. Participants used more negations in descriptions of persons presented in a stereotype inconsistent situation ($M = 1.74, SD = 1.32$) than in descriptions of persons presented in stereotype consistent situations ($M = 0.79, SD = 1.12$). No main effect of described person ($F < 1$) or interaction effect ($F(1, 61) = 2.81, p = .10$) emerged.

Unexpectedness of behavior

The analysis on unexpectedness revealed a large main effect of gender stereotype consistency, $F(1, 61) = 136.17, p < .01, \eta_p^2 = .69$, showing that the behavior of a person (man or woman) practicing a gender stereotype inconsistent sport (i.e., jazz ballet or rugby) was rated as significantly more unexpected ($M = 6.10, SD = 0.82$) than the behavior of a person practicing a gender stereotype consistent sport ($M = 3.10, SD = 1.18$). We observed no significant main effect of described person, $F < 1$, nor an interaction effect, $F(1, 61) = 2.40, p = .13$ in this analysis.

In addition, we found that the number of negations used in describing the person was significantly correlated with these judgments of *unexpectedness*, $r(65) = .35, p < .01$. This finding is in line with the idea that negation use is augmented with increasing perceived unexpectedness of the described person's behavior.²

Discussion

The findings of our third study again support our predictions regarding the negation bias. Participants spontaneously used more negations when the person engaged in stereotype inconsistent behavior than when the same person engaged in stereotype consistent behavior.

Importantly, replicating Study 2, the perceived unexpectedness of the behavior again was related to the use of negations. This affirms our suggestion that negation use reflects stereotype inconsistency: The more participants perceived a behavior to be stereotype inconsistent, the more they spontaneously used negations. Taken together, the results of our first three studies suggest that negations are an important source of bias by which people reveal stereotypic expectancies in their communications. The question whether this biased use of negations influences inferences made by recipients of these communications was examined in Study 4.

Study 4

In line with other linguistic biases (see Franco & Maass, 1996; Wigboldus & Douglas, 2007), we like to suggest that the use of negations subtly communicates stereotypic expectancies to recipients and consequently contributes to stereotype maintenance at an interpersonal level. Study 4 sought to examine three questions regarding the communicative consequences of the negation bias that have remained unanswered by our previous studies.

A first question is whether negation descriptions (e.g., Harry was not smart) communicate a different impression of the described person than affirmation descriptions (e.g., Harry was stupid). Research in psycholinguistics examined how message recipients process negated concepts. An ongoing debate is whether information introduced via negations (e.g., the concept ‘smart’ in ‘not smart’) remains accessible, or instead, is suppressed and replaced by an available antonym (i.e., stupid). One view is that a negation signals a speaker’s instruction to suppress the negated information and eliminates it from the mental representation (e.g., Hasson & Glucksberg, 2006; Kaup, 2001; MacDonald & Just, 1989). In this case, the meaning communicated by *not smart* will indeed be equivalent to *stupid*. In contrast, Giora and colleagues argue that the information introduced via negations is more likely to remain accessible than to be suppressed (Giora, 2007; Giora, Balaban et al., 2005;

Giora, Fein et al., 2005). Supporting their suggestions, several studies showed that rather than discarding the negated concept from the mental representation, a negation marker mitigates this information. For example, in one study (Giora, Balaban, et al., 2005, Exp. 1) the authors used a lexical decision task to investigate the type of knowledge that is activated from reading negated versus non-negated concepts. Results showed that both negated and non-negated concepts make the same knowledge structures more accessible. To illustrate, *not sharp* and *sharp* facilitate recognition of words associated with the concept sharp (i.e., sharp, piercing), whereas the antonym of the concept (i.e., blunt) does not facilitate recognition of the concept *sharp*. Thus, although *not sharp* and *blunt* may seem akin, they are not. That is, *not* does not deactivate the concept it negates. Sharp and not-sharp both prime the same concepts. This suggests that negation markers have no inhibitory effects. That is, the negated concept or statement remains accessible (Giora, 2007; Giora, Balaban, et al., 2005; Giora, Fein, Aschkenazi, & Alkabets-Zlozover, 2007).

The ironic consequence is that, when negations are used, the meaning of the negated concept is introduced to the discourse, and the exact opposite of the message content is made more accessible in recipients. This is in line with previous research on persuasion demonstrating that persuasive attempts containing a negation (e.g., Drinking is not sexy) can lead to attitude change opposite of what was intended (i.e., make drinking seem sexy; Christie et al., 2001; Grant, Malaviya, & Sternthal, 2004). Similarly, recipients may remember the opposite of the intended meaning (i.e., John is guilty) when they heard a negation (i.e., John was not guilty; Mayo, Schul, & Burnstein, 2004). Thus, research suggests that negations make associations with the negated concept more accessible. Consequently, rather than suppressing the associations that a speaker denies, negations may reinforce these associations in a recipient.

Extending these suggestions to the negation bias, we predicted that negation descriptions communicate a more neutral impression of the described person than affirmation descriptions. Specifically, we hypothesized that when a positive performance of a person is described with a negation (e.g., not stupid), the communicated impression is more negative than when it is described with an affirmation (e.g., smart). That is, in this case, the negation makes a negative concept (e.g., stupid) temporarily more accessible. If the use of the negation resulted from a negative stereotypic expectancy of the speaker, as our previous studies suggest, this expectancy is thus reinforced in a more negative impression in recipients. Conversely, when a negative performance is described with a negation (e.g., not smart) compared to an affirmation (e.g., stupid), we expected that the communicated impression is more positive. This could reinforce a positive stereotypic expectancy of a speaker in recipients. These suggestions are in line with the notion that negations are mitigations that downplay both positive and negative information (Giora, Fein et al., 2005).

A second question is whether recipients draw inferences about a speaker's prior expectancies when he or she uses a negation to describe someone's behavior. Previous research has demonstrated that bias in language use can be diagnostic of the speaker's expectancies (Douglas & Sutton, 2006). If the use of negations results from a speaker's positive or negative prior expectancies, it seems likely that recipients use these negations to form impressions about the speaker. In line with the negation bias, we predicted that the use of negations indicate to recipients that the speaker has an expectancy that is opposite to what is being described. For example, when a speaker describes a target's positive performance as "not bad," recipients should infer that the speaker had a more negative prior expectancy about the target than when the speaker describes the performance as "good."

The third question is whether negation descriptions induce differences in dispositional and situational attributions based on the described person's behavior. This question follows

directly from effects of other linguistic biases that contribute to stereotype maintenance at an interpersonal level. Research on the linguistic intergroup and expectancy bias (Maass et al., 1989; Wigboldus et al., 2000) demonstrated that stereotype inconsistent descriptions induce weaker dispositional inferences and stronger situational inferences by recipients than stereotype consistent descriptions. Specifically, the relatively concrete language use in the case of stereotype inconsistent messages causes recipients to infer that the behavior was an exception to the rule and was more likely caused by situational circumstances than by dispositional factors. In contrast, the more abstract formulations of stereotype consistent messages imply that the behavior was expected and reflects a stable underlying characteristic of the actor (for an overview see Maass & Arcuri, 1996; Wigboldus & Douglas, 2007).

Extending these findings to the negation bias, we predicted that the negation bias will result in a stereotype confirming pattern of situational and dispositional attributions of the described behavior among recipients. If a behavior is described with a negation we predicted that recipients infer that the behavior was unexpected and different from what the speaker presumed. Consequently, recipients should be less likely to attribute this particular behavior to stable underlying characteristics of the actor, and more likely to attribute it to temporal situational circumstances. Negation descriptions (e.g., he was not smart) should thus induce weaker dispositional and stronger situational attributions than affirmation descriptions of the same behavior (e.g., he was stupid).

Study 4 was designed to examine these three questions regarding the communicative consequences of the negation bias. Participants were presented with a number of written situations in which a speaker described the behavior of another person. For each person description, containing either negation or affirmation, participants were asked to rate (1) their impression of the described person, (2) their impression about the speaker's prior expectancies, and (3) their attributions about the described behavior.

Method

Participants and design

Twenty-nine Dutch undergraduates at the VU University Amsterdam (23 women, 6 men, mean age 20.4 years) participated in this paper-and-pencil study, and an unrelated study, and received € 2.50 for their participation of about 20 minutes. In separate cubicles, they filled out a questionnaire presenting situations in which a speaker described the behavior of a target person. The descriptions varied according to the conditions of a 2 (description type: affirmation vs. negation) X 2 (valence of described behavior: positive vs. negative) within participants design.

Questionnaire

Participants read that we were interested in the things people infer from descriptions of behavior, and that they would be presented with a number of situations in which a person described a behavior or performance of another person. They were instructed to read the different descriptions carefully, and to answer the questions for each description separately. It was stressed that there were no wrong answers and that we were interested in their opinion.

Next, participants received brief written situations in which a speaker described the behavior of another person (target). Each behavior description was introduced by a brief introduction like: “A coach has just watched his athlete Peter running a race. The coach describes Peter...” This was followed by one of the descriptions (see Appendix B) that, depending on the condition, either contained an affirmation or negation, and described either positive or negative behavior. We introduced three different speakers describing three targets. Each speaker returned four times with a different behavior description of the same target. The speakers and targets were (1) a teacher describing the behavior of a student who had made an assignment, (2) a woman describing the behavior of her brother who helped her in organizing a celebration, and (3) a sports coach describing the performance of his athlete in a race. The

four behavior descriptions of these three speaker-target situations were created with simple variations in the formulation of an otherwise comparable sentence, such that it contained either affirmation or negation, and was either positive or negative. This resulted in twelve behavior descriptions (see Appendix B). Each behavior description was presented on a separate page and was followed by a number of questions measuring the dependent variables. The order was such that a random description from the first speaker-target situation (i.e., teacher-student) was always followed by a random description from the second (i.e., woman-brother) and subsequently the third (i.e., coach-athlete), and again starting with a remaining description from the first speaker-target situation and so forth. In this way, the presentation order of the different descriptions belonging to these three speaker-target situations was randomly mixed.

Dependent variables

Participants answered the following questions for each behavior description. Please note that the items contain the words *speaker* and *target* between brackets. Depending on the speaker-target situation, participants either read teacher / woman / coach in the position of speaker, and student / brother / athlete in the position of target.

To measure *impression* we asked: How negative or positive is (speaker) about (target) in this specific situation? Participants answered on a 7-point scale ranging from 1 = *negative* to 7 = *positive*.

To measure *inferred negative and positive prior expectancy* we used two items that we analyzed separately: To what extent did (speaker) a priori have a negative expectancy about the performance of (target)? To what extent did (speaker) a priori have a positive expectancy about the performance of (target)? Participants answered on 7-point scales ranging from 1 = *not at all* to 7 = *very much*.

To assess *dispositional inferences* we asked the following three questions: To what extent is this behavior due to what (target) is like as a person? (dispositional attribution). To what extent is this behavior due to circumstances in this specific situation? (situational attribution; scale: 1 = *not at all* to 7 = *very much*). To what extent is this behavior due to the situation or the person (scale: -3 = *situation* to 3 = *person*). These three items were combined into one scale (Cronbach's $\alpha = .83$), after reverse coding the second item and recoding the third item, such that 1 = *situational attribution*, 7 = *dispositional attribution* (see also Wigboldus et al., 2000). As an additional measure of dispositional inference, we assessed *repetition likelihood* (see also Wigboldus et al., 2000; Maass et al., 1989). Participants indicated the chance with which the target would be likely to repeat the behavior in the future (in percentage 1-100 %).

Results

For each dependent variable we computed the mean scores across the three speaker-target situations for the four types of behavior descriptions. These were analyzed with 2 (description type: affirmation vs. negation) X 2 (valence of described behavior: positive vs. negative) ANOVAs with repeated measures on both factors.

Communicated impression

Not surprisingly, the analysis on the rated impression of the described person resulted in a main effect of valence of described behavior, $F(1, 28) = 562.99, p < .01, \eta_p^2 = .95$. As can be seen in Table 1, participants inferred that the speaker was more positive about the target for descriptions of positive behavior ($M = 5.56, SE = 0.10$) than descriptions of negative behavior ($M = 2.16, SE = 0.10$). We also observed a main effect of description type, $F(1, 28) = 15.37, p < .01, \eta_p^2 = .35$, showing that with affirmation descriptions ($M = 4.08, SE = 0.05$) participants inferred that the speaker was more positive about the target than with negation descriptions ($M = 3.64, SE = 0.11$). In line with our hypothesis, a significant interaction

between valence of described behavior and description type was obtained, $F(1, 28) = 89.02, p < .01, \eta_p^2 = .76$. For descriptions of positive behavior, participants judged the speaker to be less positive about the target when a negation described the behavior than when an affirmation described the behavior. For descriptions of negative behavior, the opposite pattern was observed; participants judged the speaker to be more positive about the target when a negation described the behavior than when an affirmation described it (see Table 1). These findings are consistent with our suggestion that negations convey the meaning associated with the negated concept and consequently leave a mitigated, more neutral impression on the recipient.

Inferred prior expectancies

Consistent with the idea that bias in language use can be diagnostic about the speaker's expectancies (Douglas & Sutton, 2006), we expected recipients to form speaker impressions on the basis of negation use. Specifically, we expected recipients to infer that a speaker had an a priori negative expectancy when he or she uses a negation rather than affirmation to describe a positive performance (e.g., not bad). Conversely, we expected recipients to infer that a speaker had an a priori positive expectancy when he or she uses a negation to describe a negative performance (e.g., not good). The analysis on the extent to which participants inferred a negative expectancy yielded a marginal main effect of valence of described behavior, $F(1, 28) = 4.03, p < .06, \eta_p^2 = .13$. Participants tended to infer that the speaker was a priori somewhat more negative about the target for descriptions of positive behavior ($M = 3.72, SE = 0.17$) than for descriptions of negative behavior ($M = 3.20, SE = 0.16$). We also observed a main effect of description type, $F(1, 28) = 36.58, p < .01, \eta_p^2 = .57$, showing that participants inferred that the speaker had a more negative expectancy when negation descriptions were used ($M = 3.85, SE = 0.13$) than when affirmations were used ($M = 3.07, SE = 0.11$). Consistent with our hypothesis a significant interaction was found

between valence of described behavior and description type, $F(1, 28) = 57.46, p < .01, \eta_p^2 = .67$. For descriptions of positive behavior participants inferred a stronger negative expectancy when negations were used than when affirmations were used. For descriptions of negative behavior, however, we observed the opposite; participants inferred a less negative expectancy when negations were used than when affirmations were used (see Table 1).

We observed a similar pattern of results in the analysis on the extent to which participants inferred a positive expectancy. A significant main effect of valence of described behavior emerged, $F(1, 28) = 5.41, p < .05, \eta_p^2 = .16$. For descriptions of negative behavior participants inferred that the speaker was a priori more positive about the target ($M = 4.78, SE = 0.15$) than for descriptions of positive behavior ($M = 4.25, SE = 0.15$). We also observed a main effect of description type, $F(1, 28) = 60.47, p < .01, \eta_p^2 = .68$, showing that when affirmation descriptions were used, participants inferred that the speaker had a more positive prior expectancy ($M = 4.92, SE = 0.09$) than when negation descriptions were used ($M = 4.11, SE = 0.11$). Again a significant interaction between valence of described behavior and description type was found, $F(1, 28) = 81.61, p < .01, \eta_p^2 = .75$. For descriptions of positive behavior, participants inferred a more positive expectancy in the speaker when affirmations were used than when negations were used. In contrast, for descriptions of negative behavior, participants inferred a more positive expectancy in the speaker when negations were used than when affirmations were used (see Table 1).

Taken together, these findings are in line with our suggestion that the use of negations indicate to recipients that the speaker has an opposite expectancy to what is being described. When a speaker used negations to describe a positive performance (i.e., not bad, not stupid, not annoying), recipients inferred that the speaker had a more negative (and a less positive) a priori expectancy than when the speaker used affirmations (i.e., good, smart, sweet). Similarly, when a speaker used negations to describe a negative performance (i.e., not good,

not smart, not sweet), recipients inferred that the speaker had a more positive (and a less negative) a priori expectancy than when the speaker used affirmations (i.e., bad, stupid, annoying).

Dispositional inferences

With respect to dispositional inferences we expected recipients to draw weaker dispositional attributions, and stronger situational attributions, from negation descriptions than from affirmation descriptions. The analysis on our measure of dispositional (versus situational) inferences revealed a significant main effect of valence of described behavior, $F(1, 28) = 12.53, p < .01, \eta_p^2 = .31$. Participants drew stronger dispositional inferences from positive descriptions of behavior ($M = 4.54, SE = 0.11$) than from negative descriptions ($M = 3.97, SE = 0.15$). Importantly, a main effect of description type supported our hypothesis, $F(1, 28) = 17.55, p < .01, \eta_p^2 = .39$. Participants made stronger dispositional than situational inferences from affirmation descriptions ($M = 4.51, SE = 0.11$) than from negation descriptions ($M = 4.00, SE = 0.13$). The reliable interaction between valence of described behavior and description type showed that this effect was stronger for descriptions of positive behavior than for descriptions of negative behavior, $F(1, 28) = 8.90, p < .01, \eta_p^2 = .24$. For descriptions of positive behavior dispositional inferences were significantly lower when negations were used than when affirmations were used. For descriptions of negative behavior the difference was in the expected direction but was only marginally significant (see Table 1).

The analysis on our other measure of dispositional inference, the repetition likelihood, revealed a similar pattern of findings. A significant main effect of valence of described behavior emerged, $F(1, 28) = 38.47, p < .01, \eta_p^2 = .58$. Participants estimated a higher repetition likelihood for positive descriptions of behavior ($M = 63.39, SE = 2.19$) than for negative descriptions ($M = 43.43, SE = 2.59$). In line with our hypothesis we again observed a main effect of description type, $F(1, 28) = 59.71, p < .01, \eta_p^2 = .68$. Participants estimated a

higher repetition likelihood for affirmation descriptions ($M = 60.99$, $SE = 1.88$) than for negation descriptions ($M = 45.82$, $SE = 2.17$). A significant interaction showed that this effect was again stronger for positive than for negative descriptions of behavior, $F(1, 28) = 12.54$, $p < .01$, $\eta_p^2 = .24$. However, on this measure we observed a significant difference between negation and affirmation descriptions both when describing positive and negative behavior. As predicted, the estimated repetition likelihood was significantly higher for affirmation descriptions than for negation descriptions (see Table 1).

Discussion

Taken together, the results of Study 4 demonstrate that the use of negations has communicative consequences in that it biases the inferences recipients draw about both the speaker and the target of the descriptions. When negations (e.g., not bad, not stupid), as compared to affirmations (e.g., good, smart), were used to describe a person's positive performance, recipients inferred (1) that the speaker had a more negative impression of the described person, (2) that the speaker had a more negative prior expectancy, (3) that the performance of the person was less likely caused by stable dispositional factors, and (4) that the person would be less likely to repeat this positive performance in the future. Conversely, when negations were used to describe negative performances (e.g., not good, not smart rather than bad, stupid), recipients inferred (1) that the speaker had a more positive impression of the described person, (2) had a more positive prior expectancy, and (3) that the person would be less likely to repeat this positive performance in the future.

The effects of negations on the inferences drawn were more pronounced for descriptions of positive than negative behavior. A possible reason for this observed asymmetry may be that people use negations to be polite, especially when describing a negative performance. That is, it is more polite to describe someone's stupid behavior as *not smart* than as *stupid*, because a negation mitigates the potentially face threatening information

(see Giora, Fein et al., 2005). If negations (especially those on negative behavior) are indeed used to be polite, it is not surprising that these descriptions are perceived as less informative about a speaker's expectancies and the target's disposition, because the speaker may be hiding his or her true thoughts and feelings about a person.

Importantly, the inferences made by recipients on the basis of negation use contribute to the maintenance of stereotypes and expectancies at an interpersonal level. Speakers use relatively many negations to describe stereotype inconsistent behaviors (see Studies 1-3) and this use of negations, in the current study, leads recipients to make less dispositional attributions and stronger situational attributions on the basis of this information. In this way, stereotype inconsistent information remains unexpected and the stereotypical view is perpetuated, even despite the fact that a stereotype inconsistent behavior is being described.

General Discussion

To the best of our knowledge, our research is the first to explicitly illuminate the role of negations in the communication of stereotypic expectancies. Across four studies, we found consistent evidence for our prediction that the use of negations is a source of bias that reflects and transmits a speaker's prior assumptions and expectancies about other people. By doing so, this research is the first to apply knowledge about negations from pragmatics and psycholinguistics (De Villiers & Flusberg, 1975; Jordan, 1998; Glenberg, Robertson, Jansen & Johnson-Glenberg, 1999; Wason, 1965) to the area of linguistic biases and stereotype maintenance (Franco & Maass, 1996; Wigboldus & Douglas, 2007).

Using converging methods, Studies 1, 2, and 3 demonstrated that stereotypic expectancies are an important antecedent of the use of negations. This means that when a speaker's stereotypic expectancies are violated by stereotype inconsistent behavior, the use of negations becomes more likely. For example, if a speaker's stereotypic expectancy dictates that garbage men are stupid, but a particular garbage man violates this expectancy by showing

highly intelligent behavior, the speaker is likely to reveal his prior expectancy by using a negation like *The garbage man was not stupid*. In contrast, for stereotype consistent behavior (e.g., The garbage man was stupid; The professor was smart), the use of negations is less likely.

In addition to the effects of our experimental manipulations, mediational (Study 2) and correlational analyses (Study 3) demonstrated that the perceived inconsistency of the described behavior was significantly related to the use of negations. This provided evidence for our notion that stereotype consistency is indeed the driving force behind the use of negations in a stereotype confirming way. The finding that negation use varies as a function of stereotypic expectancies supports the existence of a negation bias. With this, the negation bias is an important addition to the literature on linguistic biases. It has already been demonstrated that language abstraction (linguistic intergroup / expectancy bias, Maass et al., 1989; Wigboldus et al., 2000) and explanations of inconsistent behavior (stereotypic explanatory bias, Sekaquaptewa et al., 2003) play an important role in the communication of stereotypes. Now, we can add the use of negations to the list.

Furthermore, we demonstrated that systematic variations in the use of negations have important communicative consequences. Study 4 showed that when negations (e.g., not stupid) rather than affirmations (e.g., smart) are used to describe behavior, recipients draw biased inferences about the speaker and the target. They infer that the speaker mitigates the valence of the performance, that the speaker had a different prior expectancy, and moreover, that the behavior was likely caused by situational circumstances rather than the actor's dispositions. Again, these findings extend our knowledge on linguistic biases (Douglas & Sutton, 2006; Maass et al., 1989; Sekaquaptewa et al., 2003; Wigboldus et al., 2000). To illustrate, when a clever comment from a person belonging to a negatively stereotyped category is described with a negation (e.g., Harry's comment was not stupid), this conveys a

less positive impression than the clever comment allows. Moreover, it subtly communicates that the described person is unlikely to repeat this positive behavior in the future and instead is more likely to provide stupid comments, thereby contributing to the maintenance of the existing stereotype.

Our observation that negations result in inferences that are different from affirmations is in line with previous work on the processing of negated concepts. Giora and colleagues (Giora, 2007; Giora, et al, 2005, 2005) demonstrated that negated concepts are likely to remain accessible rather than being suppressed. Thereby the use of negations may ironically reinforce concepts and meanings in a recipient that the speaker describes as being *not* true. By extending these findings to person descriptions, our research suggests that when a speaker uses a negation, like *He was not stupid*, the speaker introduces the concept *stupid* to the discourse. Ironically, this activates associations that are opposite to the described person's actual positive behavior. The fact that stereotypic expectancies are an important antecedent of the production of negations in person description highlights the significance of such inferences. Both for the speaker and the recipients, the implicit inferences and associations sustain stereotypic expectancies. In this way, through the use of negations a speaker's stereotypic expectancy is implicitly transmitted, and consequently the stereotypic knowledge perpetuates interpersonally. These findings clarify, and are consistent with, research showing that stereotypes are difficult to disconfirm (Biernat & Ma, 2005; Rothbart & Park, 1986).

In addition to the immediate inferences that negation descriptions induce, negations also appear to have a long term effect on how the communicated information is memorized. Research has demonstrated that messages phrased with negations (e.g., John is not guilty) are represented differently in memory compared to messages phrased as affirmations (e.g., John is innocent). Mayo, Schul, and Burnstein (2004) argue that these differences can be explained by what they call a *schema plus tag model*. According to this model, a negated message is

encoded and represented as a core supposition (i.e., John is guilty) plus a negation tag (not). Especially when there is no readily accessible semantic opposite available during encoding, a sentence like *John is not guilty* is first interpreted within a message incongruent schema (e.g., guilt concept) before the negation marker is attached. This can lead to a dissociation of the negation marker and the negated concept at a later time. As a result, recipients may remember the opposite of the intended meaning (i.e., John is guilty) when they have in fact heard that John was not guilty. This effect would not occur when the same message is phrased as an affirmation (e.g., John is innocent). These findings suggest that thinking about something that was *not* true can lead to a false memory that it was true (see also Fiedler, Walther, Armbruster, Fay, & Naumann, 1996). Translated to the negation bias, this means that when stereotype disconfirming information is communicated with negations, it may end up in memory as stereotype confirming.

In a similar vein, people's judgments are influenced by messages they are told are not true. For example, research on incriminating innuendo delivered by media sources (Wegner, Wenzlaff, Kerker, & Beattie, 1981) shows that when people read a newspaper headline such as *Bob Talbert is not linked with mafia*, they develop more unfavorable impressions of Bob Talbert compared to control headlines (e.g., Bob Talbert arrives in city). This suggests that negations are a type of innuendo that introduces a presupposition about the target. Presumably, recipients infer that the introduced information (i.e., linked to mafia) must be relevant and plausible. After all, why should one deny something unless this was in fact a possibility? The denial of criminality then (e.g., P is not a criminal) may itself prove incriminating (Wegner, et al., 1981; Wegner, Coulton & Wenzlaff, 1985; for related evidence see Christie et al. 2001; Gilbert, Tafarodi & Malone, 1993; Gilbert, Krull & Malone, 1990; Grant, Malaviya, Sternthal, 2004; Hasson & Glucksberg, 2006; Kaup, Ludtke & Zwaan, 2006; Paradis & Willners, 2006). These findings demonstrate the consequences of using

negations, rather than affirmations, in person description, and highlight the importance of the negation bias.

The current results are not only consistent with previous findings, they also extend them in an important way. Our work demonstrates that negation descriptions result from the prior stereotypic expectancies of a speaker, and induce inferences about unexpectedness of the described behavior. In other words, stereotypic expectancies elicit the use of negation descriptions, and these negation descriptions in turn induce stereotypic inferences in recipients. Research on how people establish common ground suggests that this use of negations is highly functional. People are more likely to talk about stereotypes and cultural knowledge that they think they share with other people even when counter-stereotypical information is available (Clark & Kashima, 2007; Fast, Heath, & Wu, 2009). This preference for the communication of stereotypes helps people to maintain and facilitate relationships and to feel socially connected (Clark & Kashima, 2007), and it facilitates the distribution of information about cultural phenomena (Fast et al., 2009). As such, negations are an important functional linguistic mean by which stereotypes are interpersonally shared and maintained (Clark & Kashima, 2007; Fast et al., 2009; Maas, 1999). At the same time, however, a biased use of negations may contribute to the distribution of negative and harmful stereotypes that promote prejudice and discrimination. Based on the current findings, we advise people that want to, or professionally have to avoid biased language use, simply to refrain from using negations when describing the behavior of others. This simple precaution may, at least to some extent, prevent the unwanted transmission of stereotypes.

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Tables

Table 1.

Mean (and SD) recipient inferences as a function of Valence of described behavior (positive, negative) and Description type (affirmation, negation) in Study 4

Recipient inferences	Valence of described behavior			
	positive		negative	
	affirmation (e.g., good)	negation (e.g., not bad)	affirmation (e.g., bad)	negation (e.g., not good)
Impression described person	6.33 (0.64) _a	4.78 (0.79) _b	1.82 (0.48) _c	2.49 (0.78) _d
Negative prior expectancy	2.68 (0.99) _a	4.77 (1.19) _c	3.46 (1.10) _b	2.93 (0.95) _a
Positive prior expectancy	5.25 (0.75) _a	3.24 (1.11) _b	4.59 (0.85) _c	4.98 (0.87) _a
Dispositional inference	4.93 (0.83) _a	4.16 (0.67) _b	4.09 (0.80) _b	3.85 (0.91) _{b1}
Repetition likelihood (%)	74.77 (13.99) _a	52.01 (13.40) _b	47.22 (17.61) _b	39.63 (15.06) _c

Note. For impression higher numbers indicate a more positive impression. For the other recipient inferences higher numbers indicate higher values. Cell means in rows with different subscript (a, b) are significantly different at $p < .05$; b1 = marginally different from b in row at $p < .08$.

Appendix A

Stimuli used in Study 2.

Actor	Behavior	Relevant descriptions
a The man attending the birthday party (1) The man attending the funeral (2)	laughed loudly (1) ^a	he is not sad he is happy
	cried loudly (2) ^b	he is not happy he is sad
	scored high on the IQ test (1) ^a	he is not stupid he is smart
	scored low on the IQ test (2) ^b	he is not smart he is stupid
c The soccer hooligan (1) The nurse (2)	shouts at the waiter (1) ^b	s/he is not nice s/he is rude
	helps the waiter clean up (2) ^a	s/he is not rude s/he is nice
	curse at the sales woman (1) ^b	s/he is not sweet s/he is aggressive
	comforts the sales woman (2) ^a	s/he is not aggressive s/he is sweet
e The priest (1) The junkie (2)	brings the found money to the police (1) ^a	he is not dishonest he is reliable
	puts the found money in his own pocket (2) ^b	he is not reliable he is dishonest
	had a big mess in his room (1) ^b	he is not neat he is sloppy
	had his room well cleared up (2) ^a	he is not sloppy he is neat

Note. The stereotype consistent trials consist of the following Actor-Behavior combinations:

1-1 and 2-2, the stereotype inconsistent trials consist of: 1-2 and 2-1.

^a valence of behavior is positive.

^b valence of behavior is negative

Appendix B

Behavior descriptions used in Study 4 for three speaker-target situations: 1 = teacher describes student, 2 = woman describes brother, 3 = coach describes athlete.

Positive behavior, affirmation description:

1 He did well. He made the assignment in a smart way. (*Hij heeft het goed gedaan. Hij heeft de opdracht slim gemaakt.*)

2 He was sweet. He helped me well. (*Hij was lief. Hij heeft me goed geholpen.*)

3 He was fast. He had a good race. (*Hij was snel. Hij heeft goed gelopen.*)

Positive behavior, negation description:

1 He did not do badly. He did not make the assignment in a stupid way. (*Hij heeft het niet slecht gedaan. Hij heeft de opdracht niet dom gemaakt.*)

2 He was not annoying. He did not help me badly. (*Hij was niet vervelend. Hij heeft me niet slecht geholpen.*)

3 He was not slow. He did not have a bad race. (*Hij was niet langzaam. Hij heeft niet slecht gelopen.*)

Negative behavior, negation description:

1 He did not do well. He did not make the assignment in a smart way. (*Hij heeft het niet goed gedaan. Hij heeft de opdracht niet slim gemaakt.*)

2 He was not sweet. He did not help me well. (*Hij was niet lief. Hij heeft me niet goed geholpen.*)

3 He was not fast. He did not have a good race. (*Hij was niet snel. Hij heeft niet goed gelopen.*)

Negative behavior, affirmation description:

1 He did it badly. He made the assignment in a stupid way. (*Hij heeft het slecht gedaan. Hij heeft de opdracht dom gemaakt.*)

2 He was annoying. He helped me badly. (*Hij was vervelend. Hij heeft me slecht geholpen.*)

3 He was slow. He had a bad race. (*Hij was langzaam. Hij heeft slecht gelopen.*)

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Footnotes.

1. Strictly speaking, not all sentence stimuli of Study 1 were based on *stereotypic* expectancies (i.e., expectancies about social groups). That is, some also contained general expectancies about particular people and situations. We expected the same effects for these different types of expectancies. For reasons of clarity, however, we use the term stereotypic expectancies throughout the manuscript. In the subsequent studies only stereotypic expectancies were used.
2. Due to multicollinearity we did not establish all conditions for mediation (Baron & Kenny, 1986). That is, stereotype consistency condition and the potential mediator unexpectedness were so strongly related ($\beta = .83$) that there remained too little unique variance in the mediator to explain negation use when both predictors were in the equation.